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EXAMINER EHICHIOYA, FRED I				
ART UNIT 2162		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/826,517

**Applicant(s)**

BAILEY ET AL.

**Examiner**

FRED I. EHICHIOYA

**Art Unit**

2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 3, 5 - 18, 20, 21, 23, 24 and 26 - 30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 3, 5 - 18, 20, 21, 23, 24 and 26 - 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This Office Action is responsive to communication filed December 20, 2007.
2. Claims 1 – 3, 5 – 18, 20, 21, 23, 24 and 26 - 30 are pending in this Office Action.
3. Claims 4 and 22 are cancelled.

### ***Response to Arguments***

4. Applicant's argument regarding claims 1 – 11 and 26 - 30 rejected under 35 USC § 101 is not persuasive. Though claims 1 and 26 are directed to a computer implemented systems for managing the access of system resources in a database, this system as defined by the specification on page 7, lines 10 – 11 is either hardware, a combination of hardware and software, software, or software in execution; therefore is non-statutory.

5. Applicant argues:

*(a) Joshi does not teach releasing the a child lock and is silent regarding as each child lock is released, the reference count decrements by a value of one and the parent lock is released upon release of all child locks associated therewith (page 7, paragraph 2).*

*(b) Bray et al. is silent regarding the lock manager stores a reference count of the one or more child locks within the parent lock such that, as each child lock is released, the reference count decrements by a value of one and the parent lock is released upon release of all child locks associated therewith (page 7, paragraph 3).*

*(c) Chan et al. is silent regarding means for counting one or more child locks associated with the locking means, wherein the counting means is decreased by one as each child lock is released; and means for determining a lifetime of the locking means based on the number of child locks associated therewith (pages 9, paragraph 3).*

Regarding arguments (a), (b) and (c), Examiner respectfully disagrees with the applicant. Joshi discloses various locks on parent/child nodes as shown on Figures 3 - 4 and the release of locks as shown at column 4, lines 54 - 59; Joshi also discloses the means for counting one or more child locks a-- shown at Fig.11 step 104. Chen at column 12, lines 34 - 36 discloses "when a process detaches from a recovery domain, the reference count is decremented" - "process" in this instance is interpreted as "child lock" that is been detached/released. Please also refer to Ng et al., page 370, column 1, item #2; Ng et al discloses the count decrements by a value of one and the parent lock is released upon release of all child locks.

### ***Claim Rejections - 35 USC § 101***

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 - 11 and 26 - 30 are rejected under 35 U.S.C. 101 because:

Claims 1 and 26 are directed to a "system for managing the access of system resources in a database"; this is software per se. Applicant discloses on page 7, lines 10 - 11 that "system is either hardware, a combination of hardware and software, software, or software in execution". Claims 1 and 26 are neither hardware nor a

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combination of hardware and software; therefore claims 1 and 26 are non-statutory (MPEP 2106.01 [R-5] (I)).

Regarding claims 2 – 11 and 27 - 30, they depend from claims 1 and 26 respectively, recite computing steps, merely descriptive and lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101 and therefore non-statutory.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 5, 8, 9, 11 – 14, 17, 21, and 23 - 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,414,839 issued to Ashok M. Joshi (hereinafter "Joshi") in view of Non-Patent Literature "Concurrent Access to Point Data" by Ng et al., (Hereinafter "Ng").

Regarding claim 1, Joshi teaches a computer implemented system for managing the access of system resources in a database comprising the following computer executable components:

a lock manager (see column 9, line 1) that acquires a parent lock and one or more child locks (see column 10, lines 29 – 34: “*ancestor is a parent while descendants are children*”) on resource(s) of a database (see column 16, lines 17 – 18), the lock manager stores a reference count of the one or more child locks within the parent lock such that (see column 15, lines 38 – 39).

Joshi discloses as each child lock is released (column 12, lines 56 – 57); However, Joshi does not explicitly teach the parent lock is released upon release of all child locks associated therewith.

Ng discloses the reference count decrements by a value of one and the parent lock is released upon release of all child locks associated therewith (see page 369, section 3.1, paragraph 2 “*the p lock on the parent is released*” and page 370, column 1, Item # 2: *.Decrement count by one; .If (count =0) then release p(parent);*).

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Ng’s teaching of reference count decrements by a value of one and the parent lock is released would have allowed Joshi’s system to allow the search operations to be more efficient because it reduces unnecessary search paths as suggested by Ng on page 371, section 5.

Regarding claim 5, Joshi teaches the system of claim 1 further comprises a lock hierarchy designated by the lock manager (see column 9, lines 65 - 68).

Regarding claim 7, Joshi teaches the system of claim 5 further comprising a page scan optimization that maintains a last child lock until a next one is acquired (column 18, lines 42 - 49).

Regarding claim 8, Joshi teaches the system of claim 1, the parent lock is an intent lock that protects resource at lower level (column 13, lines 31 - 40).

Regarding claim 9, Ng teaches the system of claim 5, the child lock is at least one of an exclusive, update and shared lock at a level of the hierarchy (see page 369, section 2).

Regarding claim 11, Joshi teaches the system of claim 1 further comprises a pointer that can guide a release operation from each child lock to a respective parent lock (column 10, lines 63 – 68).

Regarding claim 12, Joshi teaches a computer implemented for controlling locks to manage access to system resources in a database comprising:

defining a parent-child relationship among a plurality of locks in a lock hierarchy (see column 10, lines 63 – 65);

reference counting one or more child locks associated with parent lock, such that a parent lock maintains a count reference of respective child locks associated therewith (see column 15, lines 34 – 39).

Joshi discloses as each child lock is released (column 12, lines 56 – 57); However, Joshi does not explicitly teach releasing a parent lock upon a release of all the respective child locks associated therewith.

Ng discloses the reference count decrements by a value of one and releasing a parent lock upon a release of all the respective child locks associated therewith (see page 369, section 3.1, paragraph 2 “*the p lock on the parent is released*” and page 370, column 1, Item # 2: *.Decrement count by one; .If (count =0) then release p(parent);*).

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Ng’s teaching of reference count decrements by a value of one and the parent lock is released would have allowed Joshi’s system to allow the search operations to be more efficient because it reduces unnecessary search paths as suggested by Ng on page 371, section 5.

Regarding claim 13, Joshi teaches the method of claim 12 the defining act further comprising arranging a top-down lock granularity based on logical or physical granularities of objects stored in the database (see column 10, lines 35 - 37).

Regarding claim 14, Joshi teaches the method of claim 12 further comprising pointing to a parent lock upon releasing a respective child lock associated therewith (see column 14, lines 1 - 5).



Regarding claim 17, Joshi teaches the method of claim 12 further comprising scoping the reference counting of a lock to a transaction (see column 15, lines 34 – 39).

Regarding claim 21, Joshi teaches a computer implemented method for controlling locks to manage access to system resources in a database comprising:

counting one or more child locks associated with a parent lock to obtain a reference count of the child locks associated therewith (see column 15, lines 38 – 39);  
releasing a child lock (see column 4, line 57 “leaf node” is the “child node”).

Joshi does not explicitly disclose decrementing the reference count as claimed.

Ng discloses decrementing the reference count by a value of one (see page 370, column 1, Item # 2: *.Decrement count by one*); and

Ng discloses releasing the parent lock upon the reference count reaching a zero value (see page 369, section 3.1, paragraph 2 “*when it reaches 0, the p lock on the parent is released*” and on page 370, column 1, Item # 2: *.If (count =0) then release p(parent)*)

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Ng’s teaching of reference count decrements by a value of one and the parent lock is released would have allowed Joshi’s system to allow the search operations to be more efficient because it reduces unnecessary search paths as suggested by Ng on page 371, section 5.

Regarding claim 23, Joshi discloses monitoring the reference count (see column 12, lines 34 – 36).

Regarding claim 24, Joshi discloses identifying the parent lock via a pointer (see column 10, lines 63 – 65).

8. Claims 2, 3, 10, 15, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joshi in view of Ng and further in view of Chan et al., "Chan" (U.S. Patent No. 6,108,654).

Regarding claim 2, Joshi and Ng disclose the claimed subject matter as discussed in claim 1. Joshi does not explicitly teach zero value as claimed.

However, Ng discloses at page 369, section 3.1, paragraph 2 "*the p lock on the parent is released*" and on page 370, column 1, Item # 2: *.If (count =0) then release p(parent);*) and Chan discloses the parent lock is released upon the reference count attainment of a zero value (see column 11, lines 58 – 59 discloses that locks are allocated to nodes and column 12, lines 63 – 64 states that reference counts are decremented when nodes are detached; therefore, when node 2 and node 3 of Fig. 1 are detached, the reference count becomes zero and the lock on node 1 (parent node) of Fig.1 is consequently released).

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Chan's teaching of decrementing "reference count" would have allowed Joshi and Ng's system to release all lock manager instances and this will enable users to modify and/or edit nodes.

Regarding claim 3, Joshi disclose a lock monitoring system that monitors the reference count of child locks associated with the parent lock (see column 12, lines 34 – 36).

Regarding claim 10, Chan teaches the database management system of claim 1, the reference count is performed upon completion of a least one of a scan, query or operation (col. 12, lines 36-38).

Regarding claim 15, Joshi teaches the method of claim 12 further comprising reference counting child locks directly associated with the parent lock (see column 15, lines 34 - 39).

Regarding claim 18, Chan teaches scoping the reference counting of a lock to a transaction (column 12, lines 34 – 35).

Regarding claim 20, Joshi discloses a computer implemented database management system comprising:

locking means for locking a resource on a database (see column 10, lines 29 – 34);

means for counting one or more child locks associated with the locking means (see Fig. 11 step 104 and column 15, lines 38 –39); and

Joshi discloses as each child lock is released (column 12, lines 56 – 57); However, Joshi does not explicitly disclose determining a lifetime of the locking means or decrease by one as child lock is released as claimed.

Ng discloses wherein the counting means is decrease by one as each child lock is released (see page 370, column 1, Item # 2: *.Decrement count by one*); and

Chan discloses means for determining a lifetime of the locking means (see column 6, lines 15 – 18) base on the number of child locks associated therewith (see column 6, lines 8 – 12; “nodes are interpreted as children having locks”).

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Ng’s teaching of reference count decrements by one would have allowed Joshi’s system to allows the search operations to be more efficient because it reduces unnecessary search paths as suggested by Ng on page 371, section 5.

Further Chan’s teaching of determining the time to hold a lock would have allowed the lock manager of Joshi and Ng’s system to maintain a set of resource names and provides operations for allowing multiple processes to synchronize the concurrent access of named resources.

9. Claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joshi in view of Ng and further in view of U.S. Patent No. 6,529,905 issued to Bray et al.,(Hereinafter "Bray").

Regarding claim 6, Joshi and Ng disclose the claimed subject matter as discussed in claims 1 and 5. Ng does not explicitly disclose lock hierarchy as claimed.

Joshi discloses lock hierarchy (see Figs. 3 and 4) and further Bray teaches the lock hierarchy comprises at lest one of a database lock, page lock, table lock and row lock (see column 4, lines 39 – 42: "Database locking").

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Bray's teaching of "database locking" would have allowed Joshi and Ng's system to enable other users to modify and /or edit nodes above the target node and in other branches of the document structure.

Regarding claim 16, Bray teaches the method of claim 12 further comprising acquiring an intent lock (column 2, lines 2 – 3) at least in one of a table level, page level and database level (see column 4, lines 39 - 42).

10. Claims 26 - 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joshi in view of Chan et al., "Chan" (U.S. Patent No. 6,108,654).

Regarding claim 26, Joshi teaches a computer implemented database lock management system for managing access to system resources comprising:

a computer executable lock manager (see column 9, line 1) that acquires at least a parent lock and one or more child locks (see column 10, lines 29 - 34) on a database resource (see column 16, lines 17 - 18), the lock manager creates within the parent lock a reference count of the child lock (see column 15, lines 38 - 39).

Joshi does not explicitly teach zero count as claimed.

However, Chan discloses so that the lock manager releases the parent lock upon the reference count attainment of a zero count (Though Chan does not explicitly state zero reference count, however Chan in column 11, lines 58 - 59 discloses that locks are allocated to nodes and column 12, lines 63 - 64 states that reference counts are decremented when nodes are detached; therefore, when node 2 and node 3 of Fig. 1 are detached, the reference count becomes zero and the lock on node 1 (parent node) of Fig.1 is consequently released.).

It would have been obvious to one of ordinary skill in the art at the time of present invention to combine the cited references because Chan's teaching of decrementing "reference count" would have allowed Joshi's system to release all lock manager instances and this will enable users to modify and/or edit nodes.

Regarding claim 27, Joshi discloses the computer readable medium of claim 26 further comprising a further computer executable component that monitors the reference count (see column 12, lines 34 – 36).

Regarding claim 28, Joshi teaches forwarding pointer device that identifies a parent lock associated with a released child lock (see column 10, lines 63 – 65).

Regarding claim 29, Chan discloses a probabilistic classification model (see column 10, lines 62 - 67).

Regarding claim 30, Joshi discloses the reference count is the count of direct child locks associated with the parent lock (see column 15, lines 34 - 39).

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRED I. EHICHIOYA whose telephone number is (571)272-4034. The examiner can normally be reached on M - F 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Breene can be reached on 571-272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Fred I. Ehichioya/  
Examiner Art Unit 2162

/Shahid Al Alam/  
Primary Examiner, Art Unit 2162

April 16, 2008